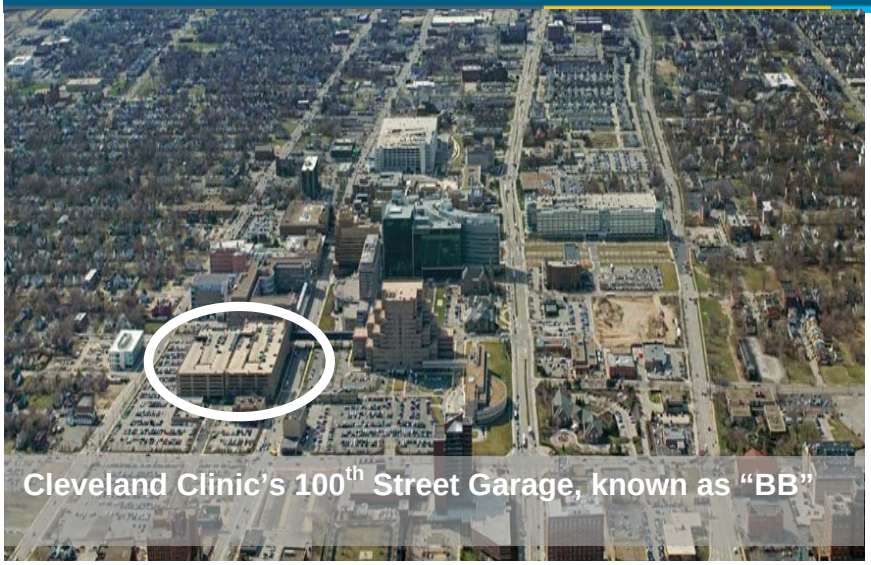

Cleveland Clinic's 100th Street Garage, known as "BB"

Cleveland Clinic Goes LED in Parking Garages

Cleveland, Ohio

CLEVELAND CLINIC PROFILE

Established: 1921

Number of Facilities: 203 locations, including 10 hospitals

Employees: Approx. 40,000

Size of BB Garage: 970,250 ft^2, 3,000 spaces, 6 stories + open roof

Cleveland Clinic is a nonprofit, multispecialty academic medical center that integrates clinical and hospital care with research and education. It was founded in 1921 in Cleveland, Ohio, and today has over 1,400 beds at its main campus and 4,400 beds system-wide; making it one of the largest hospitals in the United States. Cleveland Clinic has been exploring energy-efficient alternatives for many years.

In 2009, Cleveland Clinic joined the Hospital Energy Alliance (HEA) formed by the U.S. Department of Energy (DOE) under its Commercial Building Energy Alliance (CBEA). The CBEA brings together similar types of end users to exchange information and leverage buying capacity to help expedite market adoption of energy-efficient technologies and design practices. One activity undertaken was the development of a CBEA high-efficiency lighting parking structure specification.

Details of the Request for Proposals (RFP)

The CBEA specification was used to prepare a request for proposals, which was released in Spring 2010.

- Sent to six manufacturers, with five submitting bids.
- The contract was required to be with manufacturers rather than distributors or contractors.
- The resulting bids were very competitive and beat the estimated cost by 28%.

The criteria used to evaluate the bids is shown in Table 1.

CBEA High-Efficiency Parking Structure Lighting Specification

The specification was developed with the goal of accelerating the market availability of LED site lighting products that meet CBEA members' performance requirements. DOE released CBEA High-Efficiency Parking Structure Lighting Specification v1.1 on February 15, 2012.

Key details of the specification:

- A 5-year warranty covering the luminaire, finish, and power supply
- Identification of testing requirements
- A lighting power density (0.18 W/ft^2) that is 10% less than the ASHRAE Standard 90.1-2010 limit, and the site is eligible for the maximum Energy Policy Act 1992 tax incentive
- Uniformity metric of maximum-to-minimum ratio

Lighting Energy Efficiency in Parking (LEEP) Campaign

The US DOE is partnering with the Building Owners and Managers Association, the International Facility Management Association, and the Green Parking Council to promote the construction of high efficiency parking facilities like the one at Cleveland Clinic. A variety of resources and tools are available to those who are interested. Companies that build or upgrade their parking facilities to levels established by the campaign will be recognized by the LEEP partners. Visit the LEEP Campaign at www.leepcampaign.org and join today!

The Winner

The winning bid:

- had lowest cost
- had second lowest total for power
- was in lowest quartile for glare and appearance (evaluated on site by staff using a mock up with subjective criteria)
- had standard 5-year "all in" (including, but not limited to mounting brackets, lens, controls, drivers, light engine components) warranty
- met minimum illuminance
  - CRI = 72
  - max-to-min illuminance uniformity ratio = 3.3.

Table 1. RFP Criteria

Criteria	Percentage
Price	51
Local, FBE, MBE labor	10
Total power	10
Glare and appearance	10
Warranty extension	9
Color Rendering Index	5
Illuminance max-to-min ratio	5

The Initial Results

The results of comparing the existing 200-watt (W) high-pressure sodium (HPS) system to the LED replacement system is shown in Table 2. The LED system utilizes sensors to operate in low states 12 hours per day, reducing the load 121,000 W (applicable to the load reduction incentive – see below).

Table 2. Comparison Between Existing and New Systems

Comparison	Energy Savings	Simple Payback @ $0.0999 / kWh	Simple Payback After Incentives
LED vs. 200-W HPS	82%	4.2 years	3.8 years

Incentives

The project qualified for the FirstEnergy Non-Standard Lighting Incentives for Business Program:

Exterior Lighting = $0.50/Watt

Cleveland Clinic